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[Open Access](#)**Blood vessels segmentation based on three retinal images datasets** (Article)Bilal, S.^a, Munir, F.^b, Karbasi, M.^c^a Department of Science, International Islamic University Malaysia, Malaysia^b Department of Electrical Engineering, Kulliyah of Engineering, International Islamic University, Malaysia^c Department of Computer Science, Kulliyah of Information and Communication Technology, International Islamic University Malaysia, Malaysia[View additional affiliations](#)[View references \(10\)](#)

Abstract

Retinal images are routinely acquired and retinal blood vessels are segmented to provide diagnostic evidence of diabetic retinopathy. Due to the acquisition process, usually these images are non-uniformly illuminated and demonstrate local luminosity and contrast variability. Based on four image processing techniques, namely, Matched filter, Hough transform, Morphological operations and Watershed, the retinal blood vessels have been segmented. Then, their strengths and weaknesses are mathematically compared in terms of retinal images segmentation. Each algorithm performance was tested on DRIVE, DRIONS and High-Resolution Fundus images database. The results show that measuring the automatic segmentation algorithm performance is based mainly on how the retinal images are acquired as well as the image processing technique used for segmentation. Neural Network has been used to recognize the retinal images. The obtained results could help the eye specialists to visually examine the retinal images. © 2006-2016 Asian Research Publishing Network (ARPN).

Author keywords

Database; Eye blood vessels; Neural network; Retinal images; Segmentation

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References (10)

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doi: 10.1016/j.combiomed.2006.03.003

[View at Publisher](#) Felipe-Riveron, E., Garcia-Guimeras, N.2 [Extraction of blood vessels in ophthalmic color images of human retinas](#)(2006) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 4225 LNCS, pp. 118-126. Cited 5 times.<http://springerlink.com/content/0302-9743/copyright/2005/>

ISBN: 3540465561; 978-354046556-0

[View at Publisher](#) Akram, U.M., Khan, S.A.3 [Automated detection of dark and bright lesions in retinal images for early detection of diabetic retinopathy](#)(2012) *Journal of Medical Systems*, 36 (5), pp. 3151-3162. Cited 37 times.

doi: 10.1007/s10916-011-9802-2

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Malek, J., Tourki, R.

(2013) 2013 International Conference on Control, Decision and Information Technologies, CoDIT 2013

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(2010) *Guangdianzi Jiguang/Journal of Optoelectronics Laser*[View all related documents based on references](#)

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- 4 Odstrcilik, J., Kolar, R., Budai, A., Hornegger, J., Jan, J., Gazarek, J., Kubena, T., (...), Angelopoulou, E.
(2013) *Retinal vessel segmentation by improved matched filtering: evaluation on a new high-resolution fundus image database*, pp. 373-383.
- 5 Chaudhuri, Subhasis, Chatterjee, Shankar, Katz, Norman, Nelson, Mark, Goldbaum, Michael
Detection of blood vessels in retinal images using two-dimensional matched filters
(1989) *IEEE Transactions on Medical Imaging*, 8 (3), pp. 263-269. Cited 885 times.
doi: 10.1109/42.34715
[View at Publisher](#)
- 6 Patton, N., Aslam, T.M., MacGillivray, T., Deary, I.J., Dhillon, B., Eikelboom, R.H., Yogesan, K., (...), Constable, I.J.
Retinal image analysis: Concepts, applications and potential
(2006) *Progress in Retinal and Eye Research*, 25 (1), pp. 99-127. Cited 319 times.
doi: 10.1016/j.preteyeres.2005.07.001
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- 7 Hunter, A., Lowell, J., Steel, D., Basu, A., Ryder, R.
(2002) *Non-linear filtering for vascular segmentation and detection of venous beading*. Cited 7 times.
University of Durham
- 8 Gonzalez, R., Woods, R.
(2010) *Digital Image Processing*. Cited 21 times.
3rd ed. Pearson: Prentice Hall
- 9 Rotaru, F., Bejinariu, S.I., Nita, C.D., Luca, R., Lazar, C.
Optic Disc Identification Methods for Retinal Images
(2014) *Computer Science*, 22 (2), p. 65.
- 10 Sasaki, Y.
(2007) *The truth of the F-measure*. Cited 14 times.
S. o. C. Science Ed., University of Manchester

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